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Review of the literature regarding visual-perceptual motor skills, their relationship to reading, and to the disadvantaged child

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REVIEW OF THE LITERATURE REGARDING VISUAL-PERCEPTUAL-MOTOR SKILLS, THEIR RELATIONSHIP TO READING, AND TO THE DISADVANTAGED CHILD

by

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CHAPTER I

INTRODUCTION

There are many unhappy children in school due to learning inabilities, with the failures in reading generally recognized as a major cause. Many of these children with reading disabilities have the potential to do better. It is recognized that there is no single cause for reading retardation, but a number of factors.

Perceptual-motor development has long been recognized by specialists of child development as a vital part of the normal development of the individual and the importance of the motor cortex as it is related to learning has long been discussed by theorists in education and psychology.[1]

Various authorities in the educational field have found that the disadvantaged child starts first grade behind the advantaged child in numerous readiness skills.

In their study on "Reading Readiness and Achievement of Primary Grade Children of Different Socio-economic Strate", Hanson and Robinson came to the conclusion that the intelligence, reading readiness, and reading achievement scores attained by the advantaged subjects are significantly higher than those of the disadvantaged.[2]

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[1]Newell C. Kephart and Eugene G. Roach, The Purdue Perceptual-Motor Survey (Columbus, Ohio: Charles E. Merrill Books, Inc., 1966), 1-9.

[2]Earl Hanson and H. Alan Robinson, "Reading Readiness and Achievement of Primary Grade Children of Different Socio-economic Strata," The Reading Teacher, XXI (October, 1967), 78.

Wynn said that the majority of children from low socio-economic family groups are notoriously deficient in skills which contribute to readiness for and success in school.[1]

Cohen found that the perceptual development of culturally deprived children at the beginning reading grades (K through three) is severely impaired. Since these children are also low in other areas, these perceptual dysfunctions preclude the possibility that most of them will learn to read well. Cohen concluded that for reading readiness to be improved, a major component of a kindergarten program should be perceptual training.[2]

Research of perceptual skills training in Title I programs has been carried out by Stauffer. He reported that after the evaluation of the first year of Title I, educators decided that projects involving reading programs for the educationally and culturally deprived child need to focus in the future on developmental skills programs rather than on later classroom remedial instructions.[3]

Statement of the Problem

The writer set out to investigate the literature which discussed the visual-perceptual-motor skills fundamental to reading

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[1]Sammye J. Wynn, "A Beginning Reading Program for the Deprived Child," The Reading Teacher, XXI (October, 1967), 45.

[2]S. Alan Cohen, "Some Conclusions About Teaching Reading to Disadvantaged Children," The Reading Teacher, XX (February, 1967), 433-435.

[3]Russell G. Stauffer, "And This Is The Record," The Reading Teacher, XX (January, 1967), 294.

readiness. More specifically, the writer wished to investigate the literature which pertained to the inner-city child and to the deficiencies he has in this area. The writer is interested in ascertaining whether all incoming primary children would benefit from a perceptual-motor program and if such a program would be especially feasible in an inner-city school.

Definition of Terms

Many names have been given to the vast number of poor people living in the center of our large metropolitan cities. A cartoon by Jules Feiffer aptly depicts this:

> I used to think I was poor.
> Then they told me I wasn't poor, I was NEEDY.
> Then they told me it was self-defeating to think of myself as needy, I was DEPRIVED.
> Then they told me deprived was a bad image, I was UNDERPRIVILEGED.
> Then they told me underprivileged was overused, I was DISADVANTAGED.
> I still don't have a dime.
> But I have a GREAT vocabulary.[1]

In this context, the terms "inner-city child", "disadvantaged child", "culturally deprived child", "socially disadvantaged child", were used interchangeably and referred to the child who was deprived of the opportunity for healthy growth and development available to the majority of the other members of society in which he lives. The definition was further limited to the child born into poor families which produce a disproportionate incidence of academic failures.[2]

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[1] Jules Feiffer, The New York Post (February 17, 1965), 41.

[2] Allen E. Marans and Reginald Lourie, "Hypotheses Regarding the Effects of Child-Rearing Patterns on the Disadvantaged Child," in Disadvantaged Child, ed. by Jerome Hellmuth (Seattle, Washington: Special Child Publications, 1967), 21.

Visual-perceptual-motor skills refer to the child's visual ability to interpret his environment and of his manipulation of things and of his own body in relation to things.

The term deficit refers to

> a deficiency in the development of a particular skill relative to the level of competency found in the majority of persons at a particular age level. When this term is used, it is implied that the deficiency in skill is of such a degree as to significantly interfere with learning in tasks requiring the skill.[1]

Scope and Limitations

Literature published within the past ten years was perused to investigate the following areas:

1) the relationship between reading readiness and the development of the visual-perceptual-motor system in all children;

2) the visual-perceptual-motor deficits in children living in an inner-city area;

3) the relationship between readiness and visual-perceptual-motor skills.

The literature was limited to publications of the past ten years. Because the development of visual-perceptual-motor skills begins at birth and moves along a continuum from birth through pre-school age and into the primary grades, the readings were limited to this period in a child's life. A further limitation was the research done on the visual-perceptual-motor dysfunctions of the retarded reader, and especially the inner-city child. Because a large percentage of the children living in what is designated inner-city or disadvantaged area are Negro, and because of the writer's

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[1]Marshall B. Rosenberg, Diagnostic Teaching (Seattle, Washington: Special Child Publications, 1968), 65.

concern for this group of people, readings dealing with the Negro child and his dysfunctions in the visual-perceptual-motor area were particularly reviewed.

Summary

Culturally disadvantaged children have not been deprived of their capacities to grow intellectually. Yet these children begin school months behind their more advantaged counterparts. Studies have indicated that the perceptual development of these children is impaired and that programs for the educationally and culturally deprived child should focus on developmental skills, especially during the pre-kindergarten and kindergarten stage.

CHAPTER II

REVIEW OF THE LITERATURE

Development of the Visual-Perceptual-Motor Performance System in the Child and Its Relationship to Reading Readiness

Visual perception is learned and is based on the sequential development of physiological actions of the child. Getman holds that the child must have acquired all possible body manipulative skills before he can be taught to read. He paraphrases Hebb in regard to the totality of the organism, and states: "The ultimate in mental ability is the result of the ultimate in motor ability."

Clinical evidence gathered by those in the field of optometry proves that vision or visual perception evolves from actions of the entire organism and is really derived from the total action system of the body. Getman used the term "visuomotor complex" to indicate the unity and intricacy of the total visual system.[1]

Gesell and Ilg wrote that the development of vision in the individual child is complex, since it took countless ages of evolution in the race to bring vision to its present advanced state. Human visual perception ranks with speech in complexity and passes through comparable developmental phases. Seeing is integrated with the total action system of the child, which consists of his posture,

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[1] G. N. Getman, Learning Disorders: The Visuomotor Complex in the Acquisition of Learning Skills (Seattle, Washington: Special Child Publications, 1965), 48-65.

his manual skills and coordination, his intelligence, and even his personality. The eye may have originated as a photosensitive spot somewhere in the protoplasm of a very lowly creature; but this primitive receptor was related to a motor system in such a way as to influence the creature's movements, which even today is a primary function of vision.[1]

In discussing the development of the ocular motor performance systems, Getman states that movement of the eyes must be developed and controlled in a special manner for complete development of ocular mobility and other visual perceptual skills. The majority of children who are consistently in the lower academic third of the group will characteristically demonstrate inadequacies of ocular mobility. The child should be able to move his eyes in effective combination with each other. The ocular system is unique among organismic receptor systems in that there are two information receiving, processing, and effector circuits that have to be matched and balanced. Any inadequacy in this bilateral relationship creates stresses that interfere with the reception and comprehension of information coming through the eyes. This stress is especially present in near-centered tasks such as reading and writing. Even anatomically complete and healthy eyes must learn to perform and these performance skills must include a movement pattern across lines of print. Additional performance abilities the child must learn are fixations on a target; saccadic eye movement from target to target; pursuit of both eyes on

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[1]Frances L. Ilg and Louise Bates Ames, School Readiness Behavior Tests Used at the Gesell Institute (New York: Harper and Row, Publishers, 1965), 1-29.

a moving target; and rotations freely of both eyes in any and all directions of gaze and inspection. Well-teamed eye movements are essential to the steering of all general movements, both within and without the classroom.[1]

Delacato discussed the developmental nature of reading problems, giving credit to other researchers such as Skeffington, Harmon, and Getman. He said that the human being should be considered from birth on as of a developmental nature. He agreed with these researchers in determining that handedness was a developmental phenomenon, and that there were many other indices of neurological maturation in addition to handedness. These researchers feel that man must learn to see, and that his vision depends upon his mobility, experience and the world he lives in. Delacato said that this viewpoint represents a dynamic approach to the ontogenetic development of human vision as it relates to neurological maturation.[2]

Look stated that vision is a complex visual-perceptual-motor process and is directly related to the learning ability of a child. A child's development and learning ability are dependent upon smooth, normal visual-perceptual-motor system growth and function. When visualization has been fully attained, a child finds it less essential to use the other perceptual modes to verify incoming information. He is ready to comprehend visual symbols -- to learn to

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[1]G. N. Getman, Learning Disorders (Seattle, Washington: Special Child Publications, 1965), 66-76.

[2]Carl H. Delacato, The Diagnosis and Treatment of Speech and Reading Problems (Springfield, Illinois: Charles C. Thomas, Publisher, 1968), 1-40.

read.[1]

Through their research and clinical experience at Gesell Institute, Ilg and Ames hold the viewpoint that a child's developmental age as determined by a developmental examination series of tests is more important to his readiness to learn than is the IQ or chronological age.[2]

Readiness for learning is much more than a loosely-organized group of skills which a child must either possess or not possess. It consists of an accumulation of generalizations which allow the child to deal increasingly effectively with his environment. Learning disabilities may be viewed in terms of difficulties in this developmental sequence. When such difficulties occur, there are gaps in the sequence which will affect all future learning either by limiting or distorting it. Dunsing emphasized the therapeutic use of sensory stimulations and motor skill training as a groundwork for higher functioning. He listed Kephart, Piaget, and Hebb among those who have contributed toward a description of early sequential perceptual-cognitive development.[3]

In their research writings, Frostig and Horne state that they are in agreement with earlier research by Piaget concerning the development of intelligence in children. They state that perception

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[1]Yim Kai Look, "A Dynamic Visual Concept of Child Development," The Optometric Weekly, LIX (March 28, 1968), 27-30.

[2]Frances L. Ilg and Louise Bates Ames, School Readiness (New York: Harper and Row, Publishers, 1965), 5-35.

[3]Jack D. Dunsing and Newell C. Kephart, Learning Disorders: Motor Generalizations in Space and Time (Seattle, Washington: Special Child Publications, 1965), 77-82.

is the major developmental task of the child between the ages of three and about seven and one-half years of age when the child first enters school and begins to be faced with academic tasks. They found that, from a developmental point of view, the child entering kindergarten or first grade is expected to have adequate sensory-motor abilities, language and perception, and a sufficient degree of social adjustment and emotional control to be able to learn in a group situation. Frostig's research has found that a large number of children who scored low in their visual perceptual development on the Marianne Frostig Developmental Test of Visual Perception were unable to meet both the academic and behavioral demands of school in the early grades.[1]

Discussing the learner and the learner's developing readiness to read, Barsch said that details of a child's spatial world study area must be such that it will trigger his visual-perceptual-motor skills for success; attention must be given to his general patterns of movements in his spatial world. The learner should have proper orientation to "front," "back," "side," "up," and "down."[2]

Tinker reported that as pupils develop and become more mature readers, they made fewer fixations and regressions. The relationship of oculomotor behavior to reading performance eventually led to photographing eye movements to aid diagnosis in reading clinics and in other reading programs. The next step was to train eye movements

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[1]Marianne Frostig and David Horne, Learning Disorders: An Approach to the Treatment of Children with Learning Disorders (Seattle, Washington: Special Child Publications, 1965), 293-305.

[2]Ray H. Barsch, Learning Disorders: Six Factors in Learning (Seattle, Washington: Special Child Publications, 1965), 327-343.

by means of a variety of pacing techniques in an attempt to improve reading.[1]

The early motor response of the child is the earliest behavioral response of the human organism and represents the beginning of a long process of development and learning. Through motor explorations the child begins to find out about himself and the world around him, and these motor experimentations and his motor learnings become the foundation upon which such knowledge is built. Motor activities play a major role in intellectual development.[2]

Visual-Perceptual-Motor Skills and Learning Disabilities

Reading disabilities may be a failure to develop specific perceptual-motor skills to an expected proficiency. Pre-school experiential skills consisting of visually-controlled general and special action skills of body movement, along with visual-perceptual developmental experience are needed. The skill and accuracy of eye-hand coordination in producing drawn and written symbols become the foundation to visual interpretation of likenesses and differences in words and numbers printed in workbooks and texts.[3]

In applying diagnostic testing to kindergarten and primary children who were experiencing learning disabilities, Solan discovered

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[1]Miles A. Tinker, Bases for Effective Reading (Minneapolis: University of Minnesota Press, 1965), 25-85.

[2]Jack D. Dunsing and Newell C. Kephart, Learning Disorders (Seattle, Washington: Special Child Publications, 1965), 35-41.

[3]W. R. Henry, "Differential Observations for Visually Related Classroom Problems," The Optometric Weekly, LIX (December 5, 1968), 35-39.

consistent perceptual deficiencies such as poorly-developed perceptual form constancy, inadequate spatial and directional relationships, immature visual motor development, and poor visual memory.[1]

In Frost's textbook, one chapter was contributed by Ilg. In her chapter entitled "The Child from Three to Eight with Implications for Reading," Ilg stated that adults are prone to neglect the developmental aspects of a child's growth. Ability to read does not appear suddenly; the organism makes long and elaborate preparation. In studying the relationship of the process of learning to read, outward manifestations of posture and behavior with the inner workings of the mind can be seen which involve sensory motor abilities developing.[2]

In the Pontiac, Michigan school system a program of sensory-motor activities to meet individual needs was added to the curriculum of the physical education program at the primary level since it was found that many children's learning in reading and other subject areas was restricted because they had lacked these activities.[3]

In direct relation to this, it was found that numerous boys and girls at the Achievement Center for Children at Purdue University were helped to improve academically by taking part in a program of motor activities used as an integral part of a perceptual-motor

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[1]Harold A. Solan, "Visual Processing Training with the Tachistoscope: A Rationale and Grade One Norms," Journal of Learning Disabilities, II (January, 1969), 30-38.

[2]Joe E. Frost, Issues and Innovations in Teaching Reading (Atlanta: Scott, Foresman and Company, 1967), 81-88.

[3]Jean M. Young, "Individualized Physical Activity," NEA Journal, IV (December, 1965), 23.

training program. A three-year study showed that the group with high motor proficiency had a greater number who achieved "excellent" or "good" ratings in reading than the group with low motor efficiency.[1]

Kephart developed procedures such as chalkboard training routines, sensory-motor training, ocular control training, and form perception training, which are necessary for the basic perceptual-motor skills used in reading. The child, by manipulation of things and of his own body in relation to things, is perfecting the sensory-motor process and is learning to match sensory data to motor data.[2]

Relationship Between Reading Readiness and Visual-Perceptual-Motor Skills

Perception begins with coded information from various sensory receptors. Experimental psychology has always implicitly assumed that sensations provided both necessary and sufficient information about the external world for perception of that world to occur. The importance of motor activity is crucial to the elaboration of the intellectual functional structure.

Too many children with learning disabilities have learned movement patterns as skills, and consequently, their responses are stereotyped, rigid, and may or may not be purposeful. Such children have not learned to generalize these patterns so as to be able to adapt easily to a wide variety of situations. Generalized movement patterns are variable, adaptive, and purposeful; they set the stage

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[1]Charles A. Bucher, "Health, Physical Education and Academic Achievement," NEA Journal, LIV (May, 1965), 38-40.

[2]Jack D. Dunsing and Newell C. Kephart, Learning Disorders (Seattle, Washington: Special Child Publication, 1965), 35-41.

for the sequential development of internalized motor generalizations. Motor generalization provides a persons with a fundamental perceptual-cognitive structure which allows him to organize, interpret, and manipulate the object world meaningfully and adequately.

Perceptual awareness must be present for a person to organize, interpret, and manipulate the object world meaningfully and adequately. Eye control is important for a child to be able to center his eyes on an object, for the centering process depends upon perceptual information for its guidance. Further development normally results in a motor awareness of up and down (verticality) and of left and right (laterality). Perceptual activity, in contrast to motor, emphasizes an integration (organization) of sensory imput into meaningful configurations. Perception depends on motor awareness for its development since all perceptual information comes to us in a distorted and variable manner. The child must learn to project his impressions of objects through the perceptual-motor match. "Perception must be matched to motor, and never in the opposite direction. It is important that the match be made in the proper direction."[1]

> All perceptual data involve distortions. In the visual field, consider that happens when a disc is viewed from different orientations. If viewed "head on" the projection on the retina is a circle. If the disc is rotated slightly, the retinal image becomes an oval. If rotated 90 degrees, the image becomes a straight line. At all times, however, you continue to see a round disc. At an early age you manually manipulated similar objects in all sorts of ways, constantly changing the visual orientation as you explored. Your hand kept telling you, "This is round." Your eye kept telling you, "This is changing its shape." Your hand eventually won

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[1] Ibid., 83-101.

> the argument and you matched the visual information to the motor information, altering the former to fit the latter.[1]

The study of LaCruz and LaVeck found that a number of children are slow learners because of poor performance due to various sensory and motor deficits. They concluded that readiness to read depends a great deal on sensory and motor imput for an effective learning experience.[2]

In suggesting the possibility that intermodal integration is prerequisite to learning the reading skill, Birch and Belmont concluded that in acquiring reading skills, primary perceptual factors are most important for initial acquisition but more general intellectual factors are important for later elaboration.[3]

Barrett researched visual discrimination abilities and first grade reading achievement as one of the intermodal perceptual factors in the relationship between reading readiness and visual-perceptual-motor skills. One of the objectives of the research workers of the past forty years had been to isolate understandings and abilities which are predictively related to first-grade reading achievement. Visual discrimination, as evidenced by the fact that all available reading readiness tests devote attention to it, apparently passes

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[1]Newell C. Kephart, The Slow Learner in the Classroom (Columbus, Ohio: Charles E. Merrill Publishing Company, 1971), 22.

[2]Felix de LaCruz and Gerald D. LaVeck, Learning Disorders: The Pediatricians' View of Learning Disorders (Seattle, Washington: Special Child Publications, 1965), 30-47.

[3]Herbert G. Birch and Lillian Belmont, "Auditory-Visual Integration, Intelligence and Reading Ability in School Children," Perceptual and Motor Skills, XX (April, 1965), 295-305.

this characteristic.[1]

The early, simple games of the child are intended to develop his sense organs and his motor system. He manipulates things and his own body in relation to things, is perfecting his sensory motor process, and is learning to match sensory data. The child is building up a plactic, adaptive perceptual-motor process which will allow him to adjust his behavior to varied demands. As a result of deficiency in basic perceptual-motor skills with which many children are coming to school, they are less able to participate in the formal educational activities which are arranged for them and they are less able to learn from these activities. So, they become the slow learners and readers in the classroom.[2]

Ellingson, in discussing dyslexia, a type of reading inability, stated that no matter what specific form reading disability takes for a particular child, the one word that describes this problem area is perception. Visual perception is the key to reading. Visual-motor coordination is the ability to coordinate vision with movements of the body. Visual-motor coordination is important to space perception and planning motor sequences which leads to reading readiness.[3]

Form perception development of the child is important in the word analysis method used in learning to read. The child who is

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[1]Thomas C. Barrett, "Review: Visual Discrimination and First Grade Reading," Reading Research Quarterly, I (Fall, 1965), 51-76.

[2]Jack D. Dunsing and Newell C. Kephart, Learning Disorders (Seattle, Washington: Special Child Publications, 1965), 3-6.

[3]Careth Ellingson, The Shadow Children (Chicago: Topaz Books, 1967), 23-29.

weak in form perception has real difficulty because he is asked to break down into a serial order of parts a globular whole which for him has no parts. The development of adequate form perception depends upon the adequate learning of basic sensory-motor skills. Clinical evidence indicates that training programs designed to increase form perception ability can aid the child in increasing his achievement level.[1]

Monroe and Rogers believe that it takes a great deal of experience in reading to acquire the visual skills needed in reading. The motor ability needed to adjust the eyes for near vision begins to develop in early infancy. To be ready to read, the child must accustom his eyes to near-point vision for longer and longer periods. He will need to direct his eyes to sequence from left to right.[2]

One of the basic ways in which man matures is in his motor abilities. One of the characteristics of children with learning disabilities is minor incoordination, often affecting such skills as hopping, skipping, bicycle riding, buttoning, and tying shoe-laces. Laterality disturbances also are included since they are associated with certain types of learning disabilities.[3]

Reading readiness demands good control of eye movements. Eye movements are visual as well as motor skills. While reading,

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[1]Jack D. Dunsing and Newell C. Kephart, Learning Disorders (Seattle, Washington: Special Child Publications, 1965), 71-119.

[2]Marian Monroe and Bernice Rogers, Foundations for Reading Informal Pre-Reading Procedures (Glenview, Illinois: Scott, Foresman and Company, 1964), 92-109.

[3]Doris J. Johnson and H. R. Myklebust, Learning Disabilities (New York: Grune and Stratten, 1967), 1-63.

a child fixates briefly at just a few places on each line of type and then makes a saccadic jump to another spot farther along the line.[1]

Tinker reported that perception in reading is dependent upon the meaning that occurs when visual impression is matched with the sound of a word in language usage. Eye movements to obtain visual perceptions are complex motor adjustments. Oculomotor behavior in reading involves saccadic moves between fixations, convergence and divergence movements, and the relations that exist between eye-movement duration, pause duration, and reading time. He stated that a readiness to read showed the greatest amount and most rapid rate of improvement in oculomotor behavior in reading and occurred during the first four grades.[2]

Both vision and reading are highly dynamic and involve perceptual, motor, and associative aspects. Vision is a cognitive act involving the converting of the raw data of sight into something meaningful. The oculomotor control is complex, so it is not hard to understand that many children are slow to develop sufficient control over eye movements to make the delicate pursuit and saccadic fixation movements required in reading. By integration of visual information with information from other senses and from the memory of previous experiences, the child builds a visual world. Vision is an information gathering process involving integration of the sight data with

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[1]James R. Gregg and Gordon G. Heath, The Eye and Sight (Boston: D. C. Heath and Company, 1964), 94-96.

[2]Miles A. Tinker, Bases for Effective Reading 25-85.

other sensory-motor information to permit understanding of what is seen which becomes better developed as the child's readiness to learn to read becomes more pronounced.[1]

Bond and Tinker concluded that a large number of disabled readers exhibit poor motor coordination which is manifested by awkwardness in walking, running, writing, and athletic activities. Tests of motor precision tend to yield better scores for superior readers than for non-readers. These reading disability cases lack precision in motor control, such as in making motor adjustments required in reading, and in bodily adjustments needed to attend persistently to selected stimuli.[2]

In a study which rated 220 elementary pupils in the Los Angeles area as being disabled readers, Shearer found that sixty-six per cent manifested perceptual-motor problems.[3]

In his book Reading in the Elementary School, Spache described perceptual skills as visual discrimination skills, and stated that they derived from or were based upon physical handling of objects. In other words, the child tends to explore objects in space -- to learn shapes and spatial relationships first with his hands, later with his eyes. Those children who have had little experience with objects or forms at near-point have difficulty with the ultimate visual

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[1]Nathan Flax, "Visual Factors Which Affect Reading Achievement," The Optometric Weekly, LVIII (July 20, 1967), 19-25.

[2]Guy L. Bond and Miles A. Tinker, Reading Difficulties, Their Diagnosis and Correction (New York: Appleton-Century-Crofts Publishing Company, 1967), 114-115.

[3]R. V. Shearer, "Eye Findings in Children with Reading Difficulties," Journal of Pediatric Opthalmology, III (November, 1966), 47-53.

discrimination among words necessary for reading. Spache described these difficulties as: child lacks perception, child lacks hand-eye coordination, or child lacks orientation to left and right.[1]

In an investigation of seventy-five severely retarded readers, Sherk found that the mean scores of fifty-one experimental group subjects and twenty-four control group subjects were significantly low on the Frostig Developmental Test of Visual Perception. He said it was evident that visual-perceptual-motor deficits were found in groups of retarded readers.[2]

Bannatyne and Wichiarajote, in their research, found that balance requires the integration of visual, proprioceptive and muscular information. They stated that the ability to balance on one leg with the eyes open is positively correlated with spelling achievement. They concluded that overall coordinated motor control, eye-motor coordination, et cetera, is necessary to good spelling and reading readiness.[3]

Reading disability is a function of inefficiency in the integration of related perceptual systems rather than a function of structural deficiency. School learning places increasing demands on the visual system as the focus for the integration of his multi-

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[1]George D. Spache, Reading in the Elementary School (Boston: Allyn and Bacon, Inc., 1964), 32-57.

[2]John K. Sherk, Jr. and Robert E. Leibert, "Visual Perceptual Ability and Reading Ability," The Optometric Weekly, LIX (November 21, 1968), 27-32.

[3]Alex D. Bannatyne and Penny Wichiarajote, "Relationships Between Written Spelling, Motor Functioning and Sequencing Skills," Journal of Learning Disabilities, II (January, 1969), 6-16.

sensory information with the other perceptual motor systems.[1]

Research by Getman and Hendrickson indicates that children who have visual-perceptual deficits are generally low not only in reading but in all academic achievements and are poorly-adjusted in the classroom.[2]

Gesell and Ilg stress the interrelation of sensory and motor functions which have evolved into a total action system. Motor-wise, the action system is a well-balanced machine. No movement can take place without affecting the equilibrium of the total machinery. The equilibrium of the four-year-old and especially the five-year-old has become relatively stable.

The visuomotor and action patterns of the four-year-old show a certain looseness and spread. Collective nouns and generalizing phrases emerge in his speech. His motor patterns show a tendency toward symmetry which gives him an awareness of two sides of a configuration. He reacts in short spurts of perception. The space world of the four-year-old is enlarging.

The visuomotor and action patterns of the five-year-old are more rigid. In perceptual activities he displays a discrete performance by singling out specific details without losing an awareness of the total entity. The five-year-old still has difficulty making an oblique stroke, which suggests that the relationships of

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[1]Nathan Brod, "Reading as a Product of Functional Efficiency in the Integration of Related Perceptual Systems," The Optical Journal and Review of Optometry, CV (March 1, 1969), 25.

[2]G. N. Getman and Homer Hendrickson, "Visual Motor Skills and Academic Performance," The Teacher of Brain-Injured Children W. M. Cruickshank, Editor. (Syracuse, New York: Syracuse University Press, 1966), 155-168.

eyes and hands will later undergo further refinements and elaborations.[1]

Kephart's recent experimentation leads toward the conclusion that a closed system, involving a feedback control, is operative in the perceptual motor process. In perceptual theory the input is thought of as activity in the sensory projection areas of the cerebral cortex. As a form of energy activates the exterior of the organism by striking certain sensitive cells, a pattern of sensory cell impulses is transmitted to the cortex which becomes the input.

The sensory inputs, of which the visual sensations are the most dominant, are all integrated together so that a total response can be obtained. Also involved with this integrative process are the effects of past experiences of the organism. All of this gives a child or adult a vastly elaborated pattern of neural impulses.

A scanning mechanism translates the input from an association pattern to a motor pattern. As a result of this scanning operation, an output pattern is generated. This is a pattern in the motor area of the cortex which will innervate the muscle. But, on the way to the muscle groups, a portion of the output pattern is drained off and fed back into the system at the input end. The presence of feedback in the perceptual process creates a closed system of control. Through the feedback mechanism, the process is perpetuated until an adequate response has been generated.

Kephart discussed perceptual activities and motor activities together rather than as separate items; thus the term perceptual-

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[1]Arnold Gesell and Frances L. Ilg, Vision, Its Development in Infant and Child (New York: Hafner Publishing Company, Inc., 1967), 30-134.

motor. The total perceptual-motor process should be considered in every learning activity set up for the child. Learning is a dynamic factor in every activity of the organism. Whenever the integrative mechanism is activated, and whenever the feedback demands an alteration in the integrative process, learning occurs. Learning and experience cannot be separated from the total perceptual cycle because learning influences subsequent activities. The consistency of input and how input is manipulated is essential in determining a child's readiness for school work.[1]

Behaviors Found In Perceptually Dysfunctioning Retarded Readers

Various professionals have pet nomenclatures for visual perceptual dysfunctions or for phases of this dysfunction: neurological disorder, dyslexia, minimal brain damage, visual motor problems, specific language disability, strephosymbolia, specific reading disability, and so on. These terms symbolizing diagnostic patterns relating to perceptual and perceptual-motor behaviors are used by the professionals viewing the dysfunctioning child from their particular disciplines. There are many types of perceptual behaviors that could be dysfunctioning, and all children have, at various times, many of these symptoms. When a retarded reader has a large number of these perceptual symptoms, his perceptual problems may be thought of as dominant, just as a severely emotionally disturbed retarded reader may be thought of as hiving dominant psychological problems. It may be decided that these dominant problems be remediated before teaching

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[1]Dunsing and Kephart, Learning Disorders, 42-70.

the child to read. But there is no such thing as a pure case of perceptual dysfunction; to categorize children into such a stereotype is dangerous as well as futile.

Behaviors observed by teachers in elementary school fall into two possible categories: the first describes behaviors commonly found in retarded readers, and the second describes behaviors directly related to visual perceptual development in both retarded and non-retarded readers. When both groups of behaviors are found together in a child, there is a current tendency to assign to this child's difficulties the label "perceptual dysfunction" or one of the variations described above. Such labels sometimes form a basis for not teaching children to read.

First Category of Behaviors

Perceptually dysfunctioning children often have difficulty learning to read and write. Behaviors listed in this category are found in most reading disability cases, but are more often found when other symptoms of perceptual problems are present.

Reversals. -- It is common for children in the early grades to confuse d and b, was and saw, et cetera. When this is a persistent problem beyond grade four, it may be part of the dysfunction syndrome.

Distorted Handwriting. -- Perceptually dysfunctioning children usually have handwritings distorted to the point of illegibility. This may be the result of eye-hand-motor and spatial problems.

Spelling. -- Dysfunctioning children may misspell as many as 90 per cent of their words.

Oral Reading. -- These children have a difficult time holding

their place on the page. In grade four, they persist in the line-skipping and word-reversing behaviors seen in normal first-grade beginning readers. Adverbs and w and th words seem to give these children particular trouble.

Blending. -- Blending sounds is particularly difficult for these children. If they are taught phonograms in isolation, they will be unable to blend word parts into wholes.

Visual Discrimination. -- These children can often discriminate the isolated e from a, but they confuse these letters in words.

Other Reading Symptoms. -- These symptoms are usually found in perceptually dysfunctioning children, but seem directly related to reading disability than to perceptual dysfunction:

1. Cannot discriminate sounds in words
2. Cannot remember the alphabet
3. Has weak visual memory of words
4. Has tendency to use sight vocabulary as the only word-attack skill in repertoire

For many perceptually dysfunctioning youngsters, an intensive remedial reading program can reduce these symptoms to a point where a child is reading at grade level. However, teachers must expect that in a large group of children, most of whom have visual perception dysfunctions and most of whom have little else working for them to compensate for their dysfunctions, the probability of success in teaching reading is greatly reduced.[1]

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[1]S. O. Richardson, "Learning Disabilities - An Introduction," International Approach to Learning Disabilities of Children and Youth, (Tulsa, Oklahoma: Association for Children With Learning Disabilities, Inc., 1966), 12-14.

Second Category of Behaviors

Children with visual perceptual problems manifest symptoms not directly related to reading. These symptoms are in fact the core behaviors of the visual perceptual dysfunction syndrome. Those observable in the classroom are listed below.

Poor Kinesthetic Awareness of One's Body. -- Kinesthetic cues are insufficient for the dysfunctioning child. He must look and touch to make sure where his body parts are in space. He has not learned to judge where his total body parts are in space. He has not learned to judge.

Poor Laterality. -- A child with poor laterality has never learned a sense of two-sidedness. Although he may be able to verbalize left and right, he does so by using outside cues, such as his ring hand, his writing hand, or a side of the room. He has not developed a sense of right and left, even though he may have a knowledge of them. He has not learned to use his own body as a point of reference for up-down, right-left, in-out, forward-back.

Poor Directionality. -- The projecting of a sense of laterality to the outside world is called "directionality." This sense enables a child to manipulate space beyond his body. He can handle spatial problems, such as discrimination of p, b, d; he can manipulate spatial figures "in his head" and can do arithmetic "without writing it down." This spatial manipulation is extended to time, so that he can handle time sequences and chronological order. The child with perceptual dysfunctions, therefore often has both

weak laterality and poor directionality.[1]

Inefficient Hand-Eye Dominance. -- All normal children develop a dominant side. Being a two-sided, bilobed animal, the human being develops one lead side and one supporting side. To have two leading sides would be most confusing: they would compete with each other and render the organism helpless. Most people tend to be right-eyed and right-handed: that is, they learn to use the left side as a support for the right. A small number of people develop left-sided dominance, with the right hand and eye used to support the functions of the left. Perhaps a small number more, for one reason or another, develop mixed or cross dominance. Such people may be left hand-dominant and right eye-dominant, or the reverse.

Left or right hand-eye dominance is not directly related to cerebral dominance. For example, normal left hand-eye-dominant people have the same brain-center control areas as right hand-eye-dominant people. Furthermore, the language center for almost all people is in the left hemisphere of the brain regardless of hand-eye dominance. Dominance tendency appears to be genetically determined, but like most inherited propensities, it is also subject to environmental influence. Thus, the behaviors observed as indicating hand-eye dominance are largely learned. Mixed or cross dominance is not a symptom of perceptual dysfunction or of reading disability. A right-handed, left-eyed child may be, for example, very efficient

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[1]Sheila Benyon, "Laterality and Directionality," Teaching Through Sensory-Motor Experiences edited by John I. Arena (Belmont, California: Fearon Publishers/Lear Siegler, Inc., 1969), 35-36.

in his hand-eye coordination.[1]

The key to understanding the symptom is efficiency. Regardless of which side is dominant or of the presence of cross-dominance, any inefficient hand-hand, eye-eye, or hand-eye operation is part of the perceptual dysfunction syndrome. Such inefficiencies can be suspected when we see the written page with sloping lines exceeding a 10-degree angle from the 90-degree axis. This same child is one who usually holds his writing tool in an awkward, pinched, or infantile grasp. Inefficient dominance joins poor laterality, weak directionality, and inaccurate body image as symptoms of poor motor coordination.

Lack of Imagery. -- Many children with visual perceptual problems have difficulty visualizing numbers, letters, shapes, and scenes. Without this visual imagery, they are unable to have the visual memory necessary for recalling sight vocabulary.

Hyperactivity. -- The visual-perception problem child may appear overactive. He lacks ability to concentrate and to fixate visually on a target for any significant length of time. That which appears to be hyperactivity may be the result of a number of factors in the syndrome, both psychological and physiological. There is evidence, for example, that perceptual dysfunctionates are neurologically hypoactive, and that overt hyperactivity may represent peak responses of overcompensation. This speculation is based on observations of hyperactive children who have been given stimulants rather

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[1]R. I. Coleman and C. Deutsch, "Lateral Dominance and Right-Left Discrimination: A Comparison of Normal and Retarded Readers," Perceptual and Motor Skills, XIX (August, 1964), 43-50.

than depressants and as a result show decreases in hyperactivity. Regardless of the cause, perceptually dysfunctioning children appear to be overactive and have great difficulty in concentrating and fixating visually.

Inefficient Saccadic Eye Movements. -- The normal eye moves in short, staccato movements rather than smooth sweeps across a page. These movements are called "saccadic eye movements." Because of many factors, the dysfunctionate's saccadic eye movements are inefficient. As a result, he loses his place on the page, regresses in his eye movements, and skips lines. His ocular pursuits are usually choppy and uncontrollable.

Poor Binocularity. -- The human being has two eyes and two visual areas of the brain, one in each cerebral hemisphere. The functional relationships between these pairs are learned. Binocularity is more a learned result of function than it is a product of physiology or structure. Usually children with poor visual perceptual development have not learned to use both occipital areas of the brain and both ocular mechanisms together. More fortunate children learn to suppress one image cortically (in the brain) or motorically (covering one eye with a hand). They are one-eyed readers (monocularity) and may be more successful at reading than those children with unsteady, intermittent binocularity, or than those children whose fragile use of both images together is achieved only with peak energy output. Such children tire quickly. If they are bright enough, they may protect the organism from the agony of overwork by avoiding reading. Children with perceptual dysfunctions tend to have either fragile binocularity

or -- most likely -- unsteady, intermittent binocularity.[1]

Inconsistent Ocular Findings. -- When a thorough vision survey is used, such as a telebinocular exam, or when a standard ocular exam is performed, the dysfunctionate's performances tend to be inconsistent. This behavior often fools examiners, because they record the patient's best response to each ocular test. Thus, for example, a child may have binocularity at one moment and double vision the next. Or, he may have 100-20 acuity in his early responses, but then work himself up to 20-20 acuity in two or three minutes. Such findings indicate an inconsistent organism struggling to perform efficiently, but an organism that is unable to maintain itself consistently.[2]

Tactual-Motor Reinforcements. -- Because of all these symptoms, the child with visual perceptual dysfunctions cannot trust his higher processes (vision, audition, and cognition). He resorts, therefore, to his basic information-processing level -- tactual-motor. He must reinforce vision, for example, by touching.

Poor Multisensory Coordination. -- In addition, the dysfunctionate has trouble coordinating simultaneous auditory, visual, and tactual stimulations. To mix these multi-inputs with ongoing cortical processes is too difficult for the child with visual-perceptual problems.

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[1]Robert M. Wilson, Diagnostic and Remedial Reading for Classroom and Clinic (Columbus, Ohio: Charles E. Merrill Publishing Company, 1967), 43-44.

[2]Helen M. Robinson, "Corrective and Remedial Instruction," Development In and Through Reading, Sixtieth Yearbook of the National Society for the Study of Education, Part I, (Chicago: University of Chicago Press, 1961), 363-366.

Poor Reproduction of Shapes. -- These children have great difficulty reproducing figures from tests that require them to draw figures or geometric shapes. Although they may eventually recall the shapes, they will either distort geometric drawings or severely constrict them.

Disheveled Clothes. -- The dysfunctionate's shoelaces are often untied, or if they are tied, they hang precariously in an awkward attempt at a bow. His buttons may be out of line with the buttonholes, and one button is often undone. His shirttail may be out, and his belt buckle may be off-center.

Splinter Skills. -- In spite of poor hand-eye coordination, the perceptually dysfunctioning child may be an outstanding athlete, or he may achieve in an area even though the particular skill required is listed above as one which the dysfunctionate performs poorly. He may be, for example, an outstanding reader. But when we look at the total picture we will see that the perceptually dysfunctioning child will only have one or two outstanding splinter skills against a background of deficiencies in most areas.

A retarded reader cannot be considered a visual perceptual problem unless the behaviors of the two categories are present. Some overeager visual perception specialists tend to include most disabled readers in this category. There are some lags in visual perception development in all children, disabled readers or not. This fact does not justify treating all disabled readers as visual perceptual problems, although they may be treated for specific visual perception weakness, such as visual discrimination or visual memory for words.

Perceptual Dysfunctions in Disadvantaged Children

Researchers have found a significantly higher than average incidence of perceptual problems in disadvantaged children. How much of the perceptual dysfunctions are due to organicity, and how much to emotional instability, developmental lag, or lack of learning is impossible to determine.

The fact that cultural deprivation is such a global and undifferentiated conception at present invites at least speculative attempts to construe the nature of the deficit and to see wherein and when the infant of the poor and lower-class parents is most likely to be experientially deprived.

One of the important features of lower-class life in poverty is crowding. Many persons live in little space. Crowding, however, may be no handicap for a human infant during most of his first year of life. Although there is no certainty of this, it is conceivable that being a young infant among a large number of people living within a room may actually serve to provide such wide variations of visual and auditory inputs that it will facilitate development more than will the conditions typical of the culturally privileged during most of the first year.

During the second year, on the other hand, living under the crowded conditions of poverty must almost inevitably be highly hampering. Under these conditions, the child encounters a markedly smaller variety of objects than does the middle-class child. As he begins to throw things and as he begins to develop his own methods of locomotion, he is likely to find himself getting in the way of adults already made ill-tempered by their own discomfort and by the frustrations of getting

into each other's ways. In such a crowded atmosphere, the activities in which the child must indulge for the development of his own interests and skills must almost inevitably be sharply curbed. "Being good" comes to be defined as both doing nothing and getting nothing interesting. Moreover, adult utterances provide such poor models of the vocal side of language that it is no wonder that children of the poor lag in their language development and in the abilities which depend upon language for their development.

In the third year, moreover, when imitation of nevel patterns of action and verbalization should presumably be well-established and should provide a mechanism for learning vocal language, the models of vocal patterns are wrong for standards to be encountered later in school. When the toddler has achieved the "learning sets" that "things have names" and that "things come in groups" and is prompted by these sets to ask such questions as "what's that?" or "is it a this or a that?" his questions are typically met with "shut up !" With things to play with and with room to play in highly limited, with opportunities to learn standard English -- or any other standard language -- markedly reduced, the youngster beyond his first year who is in the typical conditions of lower-class life has little opportunity to develop at an optimal rate in the direction demanded for later adaptation in schools and in our highly technological culture.[1]

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[1] J. McVicker Hunt, "Environment, Development, and Scholastic Achievement," Social Class, Race and Psychological Development edited by Martin Deutsch, Irwin Katz, Arthur Jensen (New York: Holt, Rinehart & Winston, Inc., 1968), 324-326.

Causes of Perceptual Dysfunctions in Disadvantaged Children

Based on his studies with disadvantaged children, Deutsch suggests that developmental lag and lack of learning to play probably form the basis for most of the dysfunctions found. Organic impairment stemming indirectly from short- and long- range effects of the deficient diet, poor general living conditions, and poor prenatal care experienced by members of the disadvantaged minority group cannot be denied, especially when the likelihood of brain damage during birth being undetected or untreated because of the inadequate care socially disadvantaged women receive is considered. Minimal organicity, however, should be compensated for by the incidental perceptual learning during early years of development. Both advantaged and disadvantaged children may suffer the same minimal brain lesions at birth, but the environment of the former may offer the opportunity to learn compensatory skills, which the environment of the latter does not. Thus, not just more organicity, but also less opportunity for perceptual learning, is the probable cause of the high incidence of visual perceptual dyfunctioning in disadvantaged children. Whatever the cause, a tendency toward lower school achievement among these children can be expected when this dysfunction is considered in the light of other widespread deficits.

The whole role of visual perception in the development of cognition and reading is still being researched. Certainly more must be discovered about the relationship between perceptual development, cognition, and reading, and much more needs to be discovered about methods of influencing this development. While the literature includes many studies implicating visual perceptual dysfunctions as one

correlate to learning disability, especially when these disabilities are found in lower socioeconomic class children, other correlates must be given equal weight in any consideration of the total pattern of educating disadvantaged children.

Research Findings and Opinions on Perceptual Programs

The research of the 70s neither fully supports nor fully condemns training for children with perceptual-motor skills. The researchers and the reviewers of the research point out that some programs appear to improve perceptual performance in the areas trained, but the long-term effect on reading is uncertain.

In reviewing twenty-eight studies that investigated the effectiveness of programs of perceptual-motor development upon reading readiness, Klesius came to the conclusion that

> The effectiveness of perceptual-motor development programs in improving reading ability can neither be confirmed nor denied. In general, perceptual-motor programs employing a wide variety of experiences appear to show promise with under-achieving intermediate grade students, and preschool children. The effectiveness of Delacato and Frostig-type programs is doubtful.[1]

In her study of the research, Robinson agreed that there were no conclusive answers to the question of the effectiveness of perceptual training to improve reading. She further stated that while some programs appear to improve perceptual performance in the particular area being trained, the long-term effect on reading is uncertain. It is also not clear whether the usual program of reading instruction may,

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[1]Stephen E. Klesius, "Perceptual-Motor Development and Reading," Proceedings of the College Reading Association, XI (1970), 42.

in itself, include crucial elements which result in improved scores on perceptual tests.[1]

Vernon, judging from an extensive analysis of the research on visual perception, stated that the role of experience, motivation, and personal qualities may account for some of the reported gains.[2]

Following this same line of thought, Cohen is of the opinion that many perceptually dysfunctioning children will learn to read if they have other assets.

> It is folly to underestimate the human organism's ability to compensate for dysfunctions. One factor may play a major role in determining whether or not a child reads, but that major factor gains its status only in relation to others.
>
> If a child with perceptual dysfunctions lacks the psycholinguistic background conducive to success in reading, then the perceptual dysfunction appears to be a very important factor. If he lacks, in addition, motivation to read, perceptual dysfunction looks even more important. Add a family history of low school achievement and low achievement expectancy by his teachers and community, and the presence of perceptual dysfunction looms as an insurmountable impediment to success in reading. On the other hand, give a perceptually dysfunctioning child any one or combination of these factors, and he usually parlays them into success in reading. Why? Because the human organism is always imperfect and always using its assets to compensate for its liabilities whether those liabilities are psychodynamic, physiological, or perceptual.[3]

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[1]Helen M. Robinson, "Perceptual Training - Does It Result in Reading Improvement?" Some Persistent Questions on Beginning Reading, edited by Robert C. Aukerman (Newark, Delaware: International Reading Association, 1972), 135-150.

[2]M. D. Vernon, Perception Through Experience (New York: Barnes and Nobel, 1970), 25-36.

[3]Alan S. Cohen, Teach Them All to Read (New York: Random House, Inc., 1969), 96.

Balow points out six reasons for recommending motor-perceptual programs as possible general additions to the curriculum for all primary grade pupils:

1. The enjoyment and developmental appropriateness of motor activity, particularly for primary school boys for whom sitting still is so inappropriate developmentally.

2. The personal recognition of success that can attend motor-perceptual activities, particularly for pupils long used to failure in school.

3. The accompanying positive attention from significant adults, usually the classroom teacher but often others as well.

4. The fact of teaching, in direct drill form, a set of visual and motor skills that may be weak, or absent, and which relate to school demands but ordinarily are left to develop incidentally.

5. Teaching, via such visual and motor activities, habits and skills of attention, without which it is most difficult to succeed in school.

6. Teaching, via such visual and motor activities, habits and skills of following directions, without which it is most difficult to succeed in school.[1]

The concensus of opinion is that individualized perceptual-motor programs are developmentally appropriate for disadvantaged children as a preventive program, or for some children with learning disabilities as a remedial program.

> When perceptual-motor development programs are used for all children without reference to their prior environmental experiences or needs, any positive influence upon reading is doubtful. The inclusion of perceptual-motor activities in lieu of free play and game-oriented physical education

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[1]Bruce Balow, "Perceptual-Motor Activities in the Treatment of Severe Reading Disability," The Reading Teacher, XXIV, (March, 1971), 523-524.

> in day care, early childhood education, or primary programs is desirable. The best advice for the teacher responsible for facilitating opportunities for a person to exercise his "right to read" is to consider perceptual-motor programs as being a supplement - not a substitute - for competent reading instruction.[1]

Balow also warns that perceptual-motor programs should be recognized for what they are -- non-specific additions to the curriculum which will probably help teach children important general behavioral skills necessary for success in school, but clearly not replacements for the careful diagnosis and direct teaching of basic school skills.[2]

It will be necessary to develop sensitive measures of the aspects of perception which are essential to reading competence, before reaching definitive conclusions of the effectiveness of perceptual training. Weaknesses of perceptual development as are now recognized may simply be concomitants without causal relevance, and a number of other factors may actually be responsible for the gains in reading now ascribed to visual-perceptual training.[3]

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[1]Stephen E. Klesius, "Perceptual-Motor Development and Reading - A Closer Look," Some Persistent Questions on Beginning Reading, edited by Robert C. Aukerman (Newark, Delaware: International Reading Association, 1972), 158.

[2]Balow, "Perceptual-Motor Activities in the Treatment of Severe Reading Disability" 524.

[3]Ibid., 542.

CHAPTER III

SUMMARY

The foregoing chapters have attempted to give some thoughts on the general development of the perceptual-motor skills in all children, the possible relationship of these skills to reading readiness, some observable behavior patterns in those children who may be deficient in those perceptual-motor skills directly and/or indirectly related to reading performance, and finally the deficits and possible causes of such deficits in the socially disadvantaged child.

Research findings indicate that the incidence of severe visual perceptual dysfunction in socially disadvantaged children is unusually high. The causes of these dysfunctions are open to speculation -- how much is minimal damage and how much is poor general development is unknown. Whatever the cause, there is a tendency toward lower school achievement among these children when this dysfunction is considered in the light of other widespread deficits.[1]

After more than thirty years of study, the question of the effects of perceptual training on learning to read is not answered. Some authorities and teachers are committed to perceptual training. Others are skeptical of its values and point to the contamination of instructional procedures which obscure the effects of perceptual training.[2]

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[1]Cohen, Teach Them All to Read, 95-96.

[2]Robinson, "Perceptual Training - Does It Result in Reading Improvement?" 135.

Perceptual-motor experiences have a place in physical education, day care, early childhood, and primary education. Perceptual-motor experiences should emphasize sequential development of a repertoire of neuromuscular skills which allow the individual to understand his body schema, discover his movement potentialities, develop efficient postural and locomotor patterns, and act with an accurate motoric response based on appropriately integrated input from the sensory milieu. The desired outcomes of enhanced movement efficiency and physical self-concept are more likely to occur as a result of developmentally sequenced perceptual-motor activities than from the traditional free play or competitive-game approach to physical education.[1]

Educators are cautioned against wholesale subjection of children to a haphazard perceptual-motor program. Heckelman expresses this thought succinctly:

> Most learning disorders form a syndrome and originate in a constellation of disorders which differ in each child. A sensory-motor sequencing program is at best only a part of a multisensory approach to the problem. Such a program may be needed in part by some children and not at all by others. The common practice today of subjecting large numbers of children solely to a sensory-motor training program is wasteful of both the teacher's and the children's time.
>
> Sensory-motor training programs in themselves do not always prevent learning problems, and they bear a close resemblance to the old-time spring remedy of sulphyr and molasses - an untasty concoction which was forced down the throats of children in hopes that its powerful ingredients might purge the system and prevent disease in the body.[2]

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[1]Klesius, "Perceptual-Motor Development and Reading," 157.

[2]R. H. Heckelman, "Sensory-Motor Sequencing Experiences in Learning," Teaching Through Sensory-Motor Experiences edited by John I. Arena (Belmont, California: Fearon Publishers/Lear Siegler, Inc., 1969), 1.

BIBLIOGRAPHY

Books

Arena, John I., ed. Teaching Through Sensory-Motor Experiences. Belmont, California: Fearon Publishers/Lear Siegler, Inc. 1969.

Barsch, Ray H. Learning Disorders: Six Factors in Learning. Seattle, Washington: Special Child Publications, 1965.

Bloom, Benjamin S.; Davis, Allison; and Hess, Robert. Compensatory Education for Cultural Deprivation. New York: Holt, Rinehart and Winston, 1965.

Bond, Guy L. and Tinker, Miles A. Reading Difficulties: Their Diagnosis and Correction. New York: Appleton Century Crofts Publishing Company, 1967.

Cohen, S. Alan. Teach Them All To Read. New York: Random House, 1969.

Cronbach, Lee J. Educational Psychology. New York: Harcourt, Brace and World, Inc., 1963.

Dechant, Emerald. Diagnosis and Remediation of Reading Disability. West Nyack, New York: Parker Publishing Company, Inc., 1968.

Delacato, Carl H. The Diagnosis and Treatment of Speech and Reading Problems. Springfield, Illinois: Charles C. Thomas, Publisher, 1968.

deLaCruz, Felix and LaVeck, Gerald D. Learning Disorders: The Pediatricians' View of Learning Disorders. Seattle, Washington: Special Child Publications, 1965.

Deutsch and Associates. The Disadvantaged Child. New York: Basic Books, Inc., 1967.

Deutsch, Martin. "Early Social Environment: Its Influence on School Adaptation." The School Dropout. Edited by Daniel Schreiber. Washington, D. C.: National Education Association, 1964.

Dunsing, Jack D. and Kephart, Newell C. Learning Disorders: Motor Generalizations in Space and Time. Seattle, Washington: Special Child Publications, 1965.

Ellingson, Careth. The Shadow Children. Chicago: Topaz Books, 1967.

Frost, Joe E. Issues and Innovations in Teaching Reading. Atlanta: Scott, Foresman and Company, 1967.

Frost, Joe L. and Hawkes, Glenn R., ed. The Disadvantaged Child: Issues and Innovations. Boston: Houghton Mifflin Company, 1970.

Frostig, Marianne. The Marianne Frostig Developmental Test of Visual Perception. Palo Alto: Consulting Psychologists Press, 1963.

_____, and Horne, David. Learning Disorders: An Approach to the Treatment of Children with Learning Disorders. Seattle, Washington: Special Child Publications, 1965.

Gesell, Arnold and Ilg, Frances L. Vision, Its Development in Infant and Child. New York: Hafner Publishing Company, Inc., 1967.

Getman, G. N. How to Develop Your Child's Intelligence. Luverne, Minnesota: The Announcer Press, 1962.

_____. Learning Disorders: The Visuomotor Complex in the Acquisition of Learning Skills. Seattle, Washington: Special Child Publications, 1965.

_____, and Hendrickson, Homer. "Visual Motor Skills and Academic Performance," The Teacher of Brain-Injured Children. Edited by W. M. Cruickshank. Syracuse, New York: Syracuse University Press, 1966.

_____; Kane, Elmer R.; Halgren, Marvin R.; and McKee, Gordon W. Developing Learning Readiness. St. Louis: Webster Division, McGraw Hill Book Company, 1968.

Gregg, James, and Heath, Gordon G. The Eye and Sight. Boston: D. C. Heath and Company, 1964.

Harris, Albert J. How To Increase Reading Ability. New York: David McKay Company, Inc., 1967.

Holt, L. Byerly. Pediatric Ophthalmology. Philadelphia: Lea and Feibiger, 1964.

Huelsman, C. B. Jr., and Robinson, Helen M. Clinical Studies in Reading. Chicago: University of Chicago Press, 1953.

Hunt, J. McVicker. "Environment, Development, and Scholastic Achievement !" Social Class, Race and Psychological Development. Edited by Martin Deutsch et. al. New York: Holt, Rinehart & Winston, Inc., 1968.

Ilg, Frances L. and Ames, Louise Bates. School Readiness Behaviour Tests Used at the Gesell Institute. New York: Harper and Row, Publishers, 1965.

Johnson, Doris J. and Myklebust, Helmer R. Learning Disabilities. New York: Grune and Stratton, 1967.

Justice, June and Sands, Adah. Help for the School's Low Achievers. Tacoma, Washington: Vision Conservation Institute of the Northwest, 1964.

Kephart, Newell C. The Slow Learner in the Classroom. Columbus, Ohio: Charles E. Merrill Books, Inc. 1971.

_____, and Roach, Eugene G. The Purdue Perceptual-Motor Survey. Columbus, Ohio: Charles E. Merrill Books, Inc., 1966.

Klesius, Stephen. "Perceptual-Motor Development and Reading - A Closer Look," Some Persistent Questions on Beginning Reading. Edited by Robert C. Aukerman. Newark, Delaware: International Reading Association, 1972.

Kraskin, Robert A. You CAN Improve Your Vision. Garden City, New York: Doubleday and Company, Inc., 1968.

Loretan, Joseph O. and Umans, Shelley. Teaching the Disadvantaged. New York: Teachers College Press, 1966.

Orem, R. C., ed. Montessori for the Disadvantaged. New York: G. P. Putnam's Sons, 1967.

Marans, Allen E. and Lourie, Reginald. "Hypotheses Regarding the Effects of Child-Rearing Patterns on the Disadvantaged Child," Disadvantaged Child. Edited by Jerome Hellmuth. Seattle, Washington: Special Child Publications, 1967.

Monroe, Marion and Rogers, Bernice. Foundations for Reading, Informal Pre-Reading Procedures. Glenview, Illinois: Scott, Foresman and Company, 1964.

Richardson, S. O. "Learning Disabilities - An Introduction," International Approach to Learning Disabilities of Children and Youth. Tulsa, Oklahoma: Association for Children With Learning Disabilities, Inc., 1966.

Riesmann, Frank. The Culturally Deprived Child. New York: Harper and Row, Publishers, 1962.

Robinson, Helen M. "Perceptual Training - Does It Result in Reading Improvement?" Some Persistent Questions on Beginning Reading. Edited by Robert C. Aukerman. Newark, Delaware: International Reading Association, 1972.

_____. "Corrective and Remedial Instruction," Development In and Through Reading, Sixtieth Yearbook of the National Society for the Study of Education, Part I. Chicago: University of Chicago Press, 1961.

Rosenberg, Marshall B. Diagnostic Teaching. Seattle, Washington: Special Child Publications, 1968.

Spache, George D. Toward Better Reading. Champaign, Illinois: Garrard Publishing Company, 1963.

_____. Teaching Procedures for Beginning School Children. Winter Haven, Florida: Winter Haven Lions Research Foundation, Inc. 1963.

_____. Reading in the Elementary School. Boston: Allyn and Bacon, Inc., 1964.

_____. A Perceptual Training Procedure for Beginning School Children. Winter Haven, Florida: Winter Haven Lions Research Foundation, Inc., 1963.

Strang, Ruth. Diagnostic Teaching of Reading. New York: McGraw Hill Book Company, 1967.

Tinker, Miles A. Bases for Effective Reading. Minneapolis: University of Minnesota Press, 1965.

Vernon, M. D. Perception Through Experience. New York: Barnes and Nobel, 1970.

Wilson, Robert M. Diagnostic and Remedial Reading for Classroom and Clinic. Columbus, Ohio: Charles E. Merrill Publishing Company, 1967.

ARTICLES AND PERIODICALS

Abrams, Jules C. "Learning Disabilities - A Complex Phenomenon." The Reading Teacher, XXIII (January, 1970), 299-303+.

Ames, Louise Bates. "Children with Perceptual Problems May Also Lag Developmentally." Journal of Learning Disabilities, II (April, 1969), 205-208.

Balow, Bruce. "Perceptual-Motor Activities in the Treatment of Severe Reading Disability." The Reading Teacher, XXIV (March, 1971), 513-525+.

Bannatyne, Alex D. and Wichiarajote, Penny. "Relationships Between Written Spelling, Motor Functioning and Sequencing Skills." Journal of Learning Disabilities, II (January, 1969), 6-15.

Barrett, Thomas C. "Review: Visual Discrimination and First Grade Reading." Reading Research Quarterly, I (Fall, 1965), 51-76.

Bateman, Barbara. "Learning Disabilities: Yesterday, Today and Tomorrow." Exceptional Children, XXXI (December, 1964), 167-177.

Birch, Herbert G. and Belmont, Lillian. "Auditory-Visual Integration, Intelligence and Reading Ability in School Children." Perceptual and Motor Skills, XX (April, 1965), 295-303.

Bouchard, Richard P. "Visual Perception: Diagnosis and Treatment in the Classroom." The Optometric Weekly, LIX (November 28, 1969), 30-38.

Brazziel, William F. "An Experiment in the Development of Readiness in a Culturally Disadvantaged Group of First Grade Children." Journal of Negro Education, XXXI (Winter, 1962), 299-302.

Brod, Nathan. "Reading As A Product of Functional Efficiency in the Integration of Related Perceptual Systems." The Optical Journal and Review of Optometry, CV (March 1, 1969), 25.

Bruininks, Robert H. "Auditory and Visual Perceptual Skills Related to the Reading Performance of Disadvantaged Boys." Perceptual and Motor Skills, XXIX (May, 1967), 179-186.

Bucher, Charles A. "Health, Physical Education and Academic Achievement." NEA Journal, LIV (May, 1965), 38-40.

Cohen, Ruth Isenberg. "Remedial Training of First Grade Children with Visual Perceptual Retardation." Educational Horizons, XLV (Winter, 1966-67), 60-63.

Cohen, S. Alan. "Some Conclusions About Teaching Reading to Disadvantaged Children." The Reading Teacher, XX (February, 1967), 433-435.

Coleman, Howard M. "Visual Perception and Reading Dysfunction." Journal of Learning Disabilities, I (February, 1968), 116.

Coleman, R. I. and Deutsch, C. "Lateral Dominance and Right-Left Discrimination: A Comparison of Normal and Retarded Readers." Perceptual and Motor Skills, XIX (August, 1964), 43-50.

Dodds, William J. "Highlights from the History of Reading Instruction." The Reading Teacher, XXI (December, 1967), 275.

Eames, Thomas H. "Visual Handicaps to Reading." Journal of Education, CXLI (February, 1959), 17-19.

Evans, James R. "Auditory and Auditory-Visual Integration Skills As They Relate to Reading." The Reading Teacher, XXII (April, 1969), 625-629.

Flax, Nathan. "Visual Factors Which Affect Reading Achievement." The Optometric Weekly, LVIII (July 20, 1967), 19-25.

Falik, Louis H. "The Effects of Special Perceptual-Motor Training in Kindergarten on Reading Readiness on Second Grade Reading Performance." Journal of Learning Disabilities, II (August, 1969), 395-402.

Goetzinger, C. P.; Dirks, D. and Baer, C. J. "Auditory Discrimination and Visual Perception in Good and Poor Readers." Readings on Reading. Edited by Benter, Alfred R., Dlabal, John J. Jr., and Kise, Leonard K. Scranton, Pennsylvania: International Textbook Company, 1969, 224-237.

Goodstein, H. A.; Whitnew, G. and Cawley, J. "Prediction of Perceptual Reading Disability Among Disadvantaged Children in the Second Grade." The Reading Teacher, XXIV (October, 1970), 23-28.

Gordon, Edmund W. "Characteristics of Socially Disadvantaged Children." Review of Educational Research, XXXV (December, 1965), 377-388.

Hanson, Earl and Robinson, H. Alan. "Reading Readiness and Achievement of Primary Grade Children of Different Socioeconomic Strata." The Reading Teacher, XXI (October, 1967), 78.

Henry, W. R. "Differential Observations for Visually Related Classroom Problems." The Optometric Weekly, LIX (December 5, 1968), 35-39.

Jensen, Norma J. and King, Ethel M. "Effects of Different Kinds of Visual-Motor Discrimination Training on Learning to Read Words." Journal of Educational Psychology, LXVI (1970), 90-96.

Kappelman, Murray M., Kaplan, Eugene, and Ganter, Robert L. "A Study of Learning Disorders Among Disadvantaged Children." Journal of Learning Disabilities, II (May, 1969), 262-273.

Karnes, Merle B., Teska, James A., and Hodgins, Audrey S. "The Effects of Four Programs of Classroom Intervention on the Intellectual and Language Development of Four-year-old Disadvantaged Children." American Journal of Orthopsychiatry, XL (January, 1970), 58-76.

Keim, Richard P. "Visual-Motor Training, Readiness, and Intelligence of Kindergarten Children." Journal of Learning Disabilities, III (May, 1970), 19-22.

Klesius, Stephen E. "Perceptual-Motor Development and Reading." Proceedings of the College Reading Association, XI (1970), 42.

Look, Yim Kai. "A Dynamic Visual Concept of Child Development." The Optometric Weekly, LIX (March 28, 1968), 27-36.

Rosner, Jerome. "Perceptual Skills - A Concern of the Classroom Teacher?" The Reading Teacher, XXIV (March, 1971), 543-549.

Scott, Ralph. "Perceptual Skills, General Intellectual Ability, Race, And Later Reading Achievement." The Reading Teacher, XXIII (April, 1970), 660-668.

_____. "Perceptual Readiness As A Predictor of Success in Reading." The Reading Teacher, XXII (October, 1969), 36-39.

Shearer, R. V. "Eye Findings in Children with Reading Difficulties." Journal of Pediatric Ophthalmology, III (November, 1966), 47-53.

Sherk, Jr., John K. and Leibert, Robert E. "Visual Perceptual Ability and Reading Ability," The Optometric Weekly, LIX (November 21, 1968), 27-32.

Smith, Mildred Beatty. "Reading for the Culturally Disadvantaged." Educational Leadership, XXII (March, 1965), 475.

Solan, Harold A. "Visual Processing Training With the Tachistoscope: A Rationale and Grade One Norms." Journal of Learning, II (January, 1969), 30-38.

Stanchfield, Jo. M. "Development of Pre-Reading Skills In An Experimental Kindergarten Program." The Reading Teacher, XXIV (May, 1971), 699-707.

Stauffer, Russell G. "And This Is The Record." The Reading Teacher, XX (January, 1967), 294.

Wepman, Joseph M. "The Perceptual Basis for Learning." Readings on Reading. Edited by Benter, Alfred R., Dlabal, John J. Jr., and Kise, Leonard K. Scranton, Pennsylvania: International Textbook Company, 1969, 77-86.

Wheelock, Warren H. and Silvaroli, Nicholas J. "Visual Discrimination Training for Beginning Readers." The Reading Teacher, XXI (November, 1967), 115-120.

Wilkerson, Doxey A. "Programs and Practices in Compensatory Education for Disadvantaged Children." Review of Educational Research, XXXV (December, 1965), 401.

Wynn, Sammye J. "A Beginning Reading Program for the Deprived Child." The Reading Teacher, XXI (October, 1967), 45.

Young, Jean M. "Individualized Physical Activity." NEA Journal, IV (December, 1965), 23.

Zaeske, Arnold. "The Diagnosis of Sensory-Motor Disabilities." Reading Disability and Perception. Proceedings of the Thirteenth Annual Convention of the International Reading Association. Newark, Delaware: International Reading Association, 1969, 52-57.